

[CLAIMS]

1. A printing system making use of a lithographic printing plate comprising the steps of:

-image-wise exposing to infrared light a heat sensitive imaging element, said element being optionally present on the press before starting said image-wise exposing step to infrared light, wherein said element comprises, on a lithographic base with a hydrophilic surface thereupon, an image-forming layer including hydrophobic thermoplastic polymer particles and a hydrophilic polymer binder, and, optionally, an infrared absorbing compound, wherein said hydrophobic polymer particles contain more than 0.1 wt % of nitrogen and have an average particle size diameter in the range from 0.015 to 0.150 μm ,

-developing the image-wise exposed imaging element by mounting it on a print cylinder of a printing press and applying an aqueous dampening liquid and/or ink to said imaging element while rotating said print cylinder,

-providing a printing run length of said press, increased with a factor of at least 5, when reducing the average particle size diameter of said hydrophobic polymer particles in an amount of more than 25 %.

2. System according to claim 1, wherein said hydrophobic polymer particles are containing structural chemical groups selected from the group consisting of amide, urethane, methacrylonitrile, crotononitrile, vinylidene cyanide, isocytosine, pyrrolidone, piperazine, cyanomethyl, cyanoethyl, cyanopropyl, cyanoaryl, cyanoacrylate, primary amines, mono- or di- n-alkyl substituted amines, urea, imide, imine, triazine, sulfonamide, onium, melamine, pyrimidine, ureido-pyrimidone, pyridine, barbiturate, isocyanurate or imidazole.
3. System according to claim 1, wherein said hydrophilic polymer binder is a water-soluble, water-dispersable, alkali-dispersable or alkali-soluble polymer.
4. System according to claim 1, wherein the hydrophobic thermoplastic polymer particles consist of a homopolymer or copolymer of monomers selected from the group consisting of styrene, tert.-butylstyrene, methylmethacrylate, para-methylstyrene, methacrylonitrile, N-alkyl substituted acrylamides, N-alkyl substituted methacrylamides and maleimides.
5. System according to claim 1, wherein the hydrophobic thermoplastic polymer particles are present in the image forming layer in an amount of at least 50 wt%.
6. System according to claim 1, wherein a hydrophilic polymer binder is present in said image forming layer or a layer adjacent thereto.
7. System according to claim 1, wherein the infrared absorbing compound is an anionic infrared cyanine dye absorbing infrared radiation in the wavelength range from 800 to 1100 nm and wherein the infrared absorbing compound is present in said image forming layer or in a layer adjacent thereto.

8. System according to claim 1, wherein the hydrophilic surface is a lithographic surface, present on a metal support, being a plate or a print cylinder.
9. Lithographic printing plate suitable for use in a printing system according claim 1.
10. Use of hydrophobic polymer particles containing more than 0.1 wt. % of nitrogen in a coating of a heat sensitive imaging element of a lithographic printing plate according to claim 9.
11. Use of hydrophobic polymer particles containing more than 0.1 wt. % of nitrogen in an image-forming layer of a heat sensitive imaging element of a lithographic printing plate according to claim 9.